

(19) World Intellectual Property  
Organization  
International Bureau



17 FEB 2005



(43) International Publication Date  
11 March 2004 (11.03.2004)

PCT

(10) International Publication Number  
**WO 2004/021385 A3**

(51) International Patent Classification<sup>7</sup>: **H01J 9/34**, 49/42

(21) International Application Number:  
PCT/GB2003/003683

(22) International Filing Date: 22 August 2003 (22.08.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
0219872.9 27 August 2002 (27.08.2002) GB

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(81) Designated States (national): AE, AG, AL, AM, AT, AU,  
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,

CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,  
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,  
MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE,  
SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (regional): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,  
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,  
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

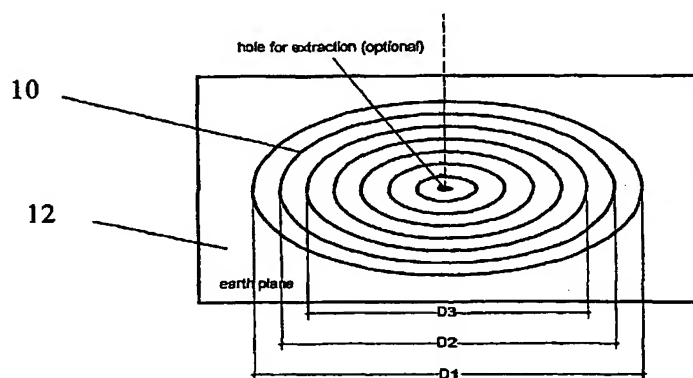
**Published:**

- with international search report
- before the expiration of the time limit for amending the  
claims and to be republished in the event of receipt of  
amendments

(88) Date of publication of the international search report:  
2 December 2004

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: **CHARGED PARTICLE MANIPULATION**



(57) Abstract: Methods and apparatus are provided for manipulating the phase space of at least one charged particle, wherein a combination of alternating current and direct current voltages applied to an electrode forms a potential which provides a region of phase space manipulation, and wherein the at least one charged particle is situated to one side of the electrode surface. A number of applications are applicable, which include a spot trap, a conveyor belt, a funnel, and ways of holding different types of particles at different distances from an array so that they can be manipulated.

WO 2004/021385 A3

## INTERNATIONAL SEARCH REPORT

National Application No

/GB 03/03683

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H01J49/34 H01J49/42

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H01J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, WPI Data, PAJ

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 206 506 A (KIRCHNER NICHOLAS J.) 27 April 1993 (1993-04-27)	1-11, 13, 17-22, 24, 27, 29, 32-37, 40, 41, 46-60, 65-69, 72, 74, 75, 80-85, 87-91, 95, 96
Y	column 14	12, 60
A		22, 23, 38, 45, 70, 71



Further documents are listed in the continuation of box C.



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Date of the actual completion of the international search

28 September 2004

Date of mailing of the international search report

15/10/2004

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## INTERNATIONAL SEARCH REPORT

International Application No.

IB 03/03683

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 43 18 872 A (MOELLER HAMBURG GMBH CO KG) 8 December 1994 (1994-12-08) claims	12,60

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

/GB 03/03683

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
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			CA 2079910 A1	13-08-1992
			DE 69210496 D1	13-06-1996
			DE 69210496 T2	09-01-1997
			EP 0524311 A1	27-01-1993
			JP 2865865 B2	08-03-1999
			JP 5509437 T	22-12-1993
			WO 9214259 A1	20-08-1992
DE 4318872	A	08-12-1994	DE 4318872 A1	08-12-1994

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